

Optical Fibre Infrastructure High Density Solutions





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About Warren & Brown Technologies

Warren & Brown Technologies (WBT) was originally established in 1921 as a tool-making factory in Melbourne, Australia. Since then, the company has evolved to become a leader in precision tools and ICT connectivity infrastructure.

WBT has remained wholly Australian owned and operated for over 100 years. This commitment to the local design, manufacturing and technology industry has created hundreds of jobs and world leading solutions.

The main facility in Maidstone, Melbourne currently comprises of over 48,000sqm of office, manufacturing, R&D and warehouse space. In addition, WBT has expanded operations to include a presence in other states around Australia.

Recently the company has also expanded its global reach by opening up many regional offices and manufacturing facilities. These operations are overseen by and integrated with WBT Australia.

We pride ourselves on being a global leader in the supply and manufacture of optical fibre and copper communications equipment, as well as torque setting equipment for automotive and industrial applications.



Australian
Owned and Operated



300+
Employees



3
Manufacturing facilities



6
Sales offices



Worldwide
Distribution

**We don't believe in network downtime,
anywhere and at anytime!**



**Product Design
& Manufacturing**
innovative & world leading solutions



**Technology
Leadership**
telecom, data centre
& enterprise networks



**Fast Product
Development Cycle**
weeks not months



**Quality Products
& Systems**
ISO 9001 third party certified



**Proven Track
Record**
official supplier to NBN & Telstra



**Supply Chain
Management**
progressive logistics solutions

Optical Fibre Infrastructure High Density Solutions

Solution overview

WBT fibre optic infrastructure solutions have elevated cable management to the next level. These high density solutions can be deployed separately or as an end to end solution in a Data Centre or Telecommunications network.

Application include:

- Meet Me Room and carrier ODF/FTP solution for splicing
- Data Hall Zone frame/cross-connect ODF/FTP solution for preterm MTP/MPO distribution
- Customer or Equipment rack deployment

The end to end solution also provides scalability at RU level, with 96F and 144F LC or LC/A deployments.

Industry leading innovation for density and usability:

96 Fibres
LC-LC/A
per RU modules
(splice &/or patch)

3,456F
in 300mm deep,
single side ODF*
deployment

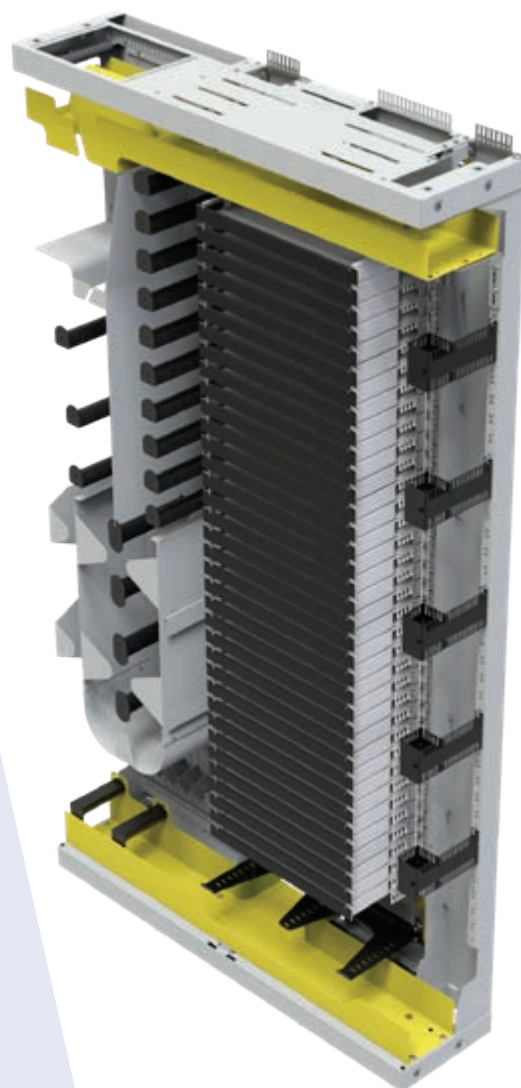
144 Fibres
LC-LC/A
per RU modules
(splice &/or patch)

5,184F
in 300mm deep,
single side ODF*
deployment

432 Fibres
MTP®/MPO
per RU modules
(splice &/or patch)

15,000+ F
in 300mm deep,
single side ODF*
deployment

**ODFs can be placed back to back and capacities can be doubled in a 600mm deep footprint*



First Application

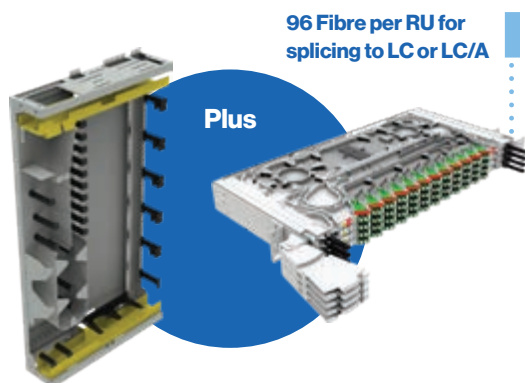
96 Fibre LC or LC/A per RU Solutions

Solution includes:

- WBT ODF's (300mm deep: 1200 x 300 x 2200mm)
- Splicing: 7006 series FTP's (up to 96F LC or LC/A per RU)
- Distribution and preterm patching: ODF deployment of HypaFOX MTP-LC front access cassettes and chassis (24F cassettes x 4 ports = 96F per RU)
- Customer rack deployment of HypaFOX MTP-LC cassettes and chassis

The 7006 series solution is based on a sub-RU modular approach of 4 trays x 24F within a 1RU tray. When used for splicing, the incoming line cable must be divided into 24F subunits and routed via protection transport tubes into the front of the fibre tray. Therefore, each 1RU FTP is made up of 4 individual sliding trays, providing a maximum per RU density of 96F. In an ODF deployment, 4 x 24 fibre tubes would be required for each 1RU tray (144 x 24F tubes per ODF).

Using 36 x 1RU 96 LC or LC/A fibre splice/patch FTP's, each ODF has a total capacity to splice/patch 3,648 fibres.



Using 96 Fibre LC or LC/A per RU modules:

Splicing and patching line cable - loose tube / stranded cable in an ODF

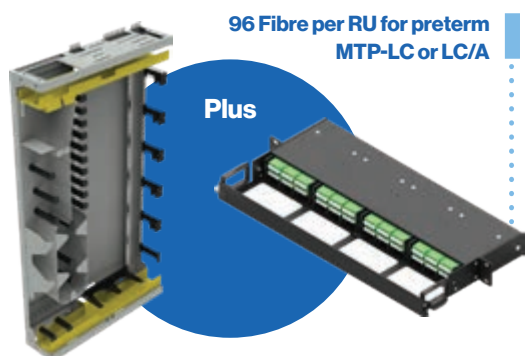
7006 Series - 96 Fibre (LC or LC/A), 1RU Fibre optic termination panels (FTP's), slide out

APPLICATION:

- Loose tube / stranded fibre cable
- Pre-terminated microcore (MTP®/MPO) cabling
- Splicing microcore / distribution cabling

ODF AND 7006 SERIES SOLUTION CAPACITY:

- Number of 1RU FTP's per ODF - 36
- Number of tubes per ODF - 144
- Total Number of LC Fibres per ODF (splice & patch) - 3,456



Patch panel and cassette modules used for patching and cross connect (main distribution, intermediate distribution) frames.

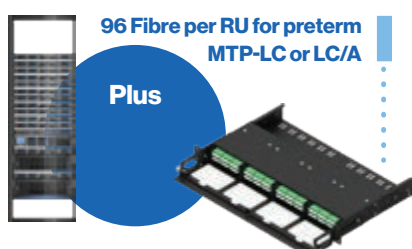
HypaFOX front access preterm solution

APPLICATION:

- Patching / distribution using Pre-terminated MTP - LC/A modules
- Distribution of internal cabling - 96 fibres per RU

ODF AND HYPAFOX FRONT ACCESS SERIES SOLUTION CAPACITY:

- Number of 1RU FTP's per ODF - 36
- Total Number of LC Fibres per ODF - 3,456



Patch panel and cassette modules used for Customer or Equipment rack deployment.

HypaFOX preterm solution: 96F (4 x 24F cassettes) per RU

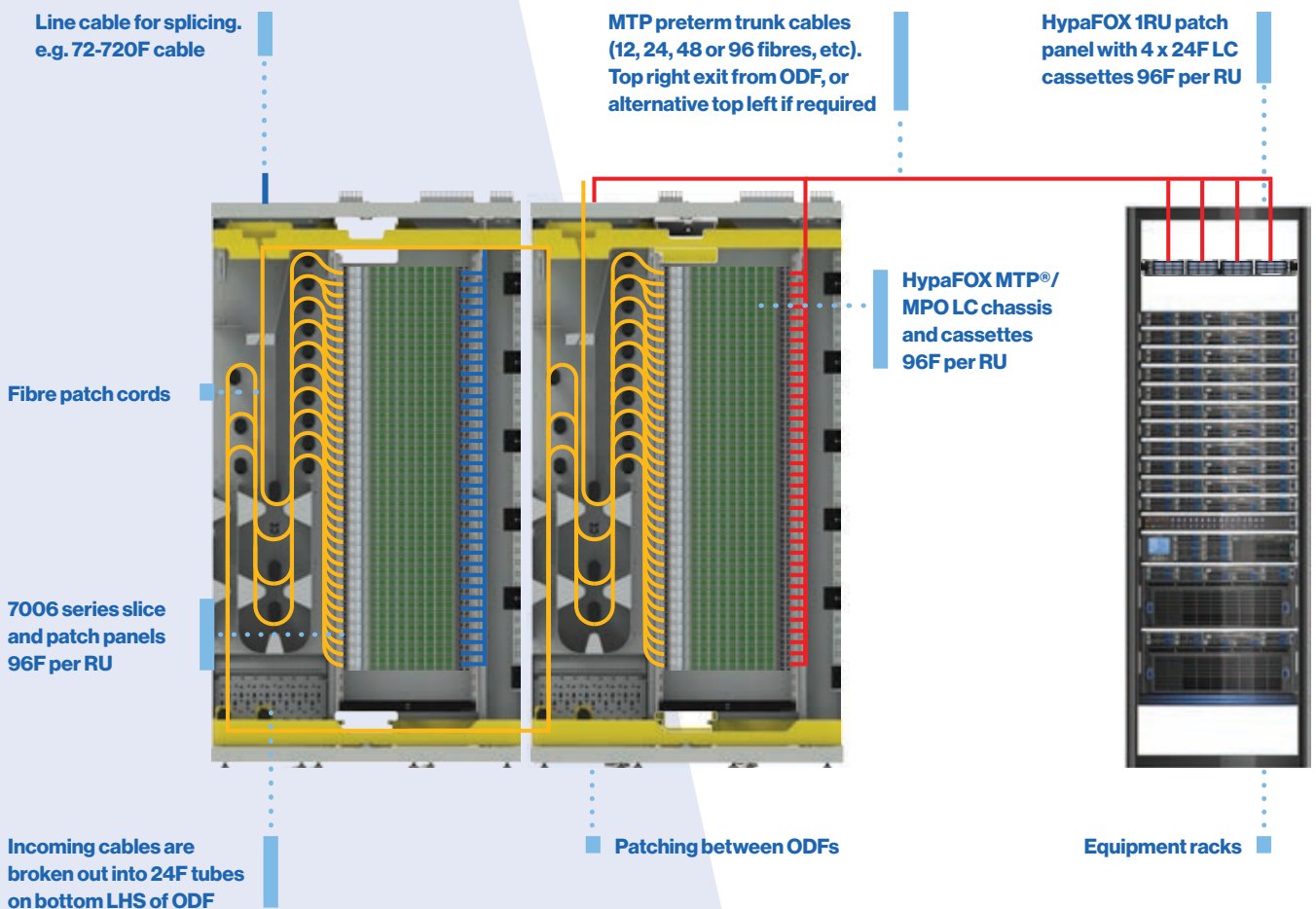
* Up to 3,456 LC fibres per ODF deployment

Deployment example

In this example, the first left hand side ODF can be used for line cable splice/patching and management of incoming high density cable and separation into transport tubes. The right hand side or adjacent ODF can be used for distribution into the Data Centre and management of distribution / trunk cabling. This ODF can also be placed in a separate location if preferred or side by side, as well as back to back. The right side ODF provides trunk cable distribution to the customer/ equipment rack within a Data Centre environment.

This example highlights incoming cables being divided into 24F sub units / transport tubes, and spliced into 7006 series 1RU 96F FTPs.

HypaFOX front access MTP-LC cassettes are used in the adjacent ODF for cross patching and distributing MTP/MPO pre-terminated cabling to equipment racks. HypaFOX MTP®/MPO chassis and cassettes used for top of rack fibre management.



Second Application

144 Fibre LC or LC/A per RU or 432 Fibre (MTP®/MPO) per RU

Solution includes:

- WBT ODF's
- Splicing: 7106 series FTP's (up to 144F LC or LC/A per RU)
- Distribution and preterm patching: ODF deployment of TC7010 series MTP-LC front access cassettes and chassis (12 x 12F micro cassettes = 144F per RU)
- Customer rack deployment of HypaFOX MTP-LC cassettes and chassis

If terminating on LC connectors and using a WBT 1RU 7106 series 144 fibre FTP, each 1728F cable can be divided into 12 x 144 fibre sub-units and routed to each of the 12 x 1RU FTP's. Within the FTP's the 144F is then broken out into 4 x 36F groups for each tray.

432 Fibre (MTP®/MPO) per RU: Furthermore, if terminating on MTP®/MPO connectors and using a WBT 1RU 7106 series 432 fibre FTP, each 1728F cable can be divided into 4 x 432 fibre sub-units and routed to 4 x 432F 1RU MTP®/MPO FTP's. In order to provide cable/tube slack for removal and maintenance of optical fibre trays, each tube can also be routed down the RHS of the ODF and looped back into the 1RU FTP's.

Using 144 Fibre per RU modules:

Splicing and patching line cable – High core count flexible ribbon or stranded cable	7106 Series - 144 Fibre (LC or LC/A), 1RU FTP, swing out
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APPLICATION:

- Rollable Ribbon
- Loose tube / stranded fibre cable
- Splicing microcore / distribution cabling

ODF AND 7106 SERIES SOLUTION CAPACITY:

- Number of 1RU FTP's per ODF – 36
- Number of 144F tubes per ODF – 36
- Total Number of LC Fibres per ODF (splice & patch) – 5,184 fibres
- 1RU splice/patch, 144F LC/A, LP, Singlemode G657A2, 19" and 21" offset, stranded fibre (P/N 71063241007081L)

Using 432 Fibre (MTP®/MPO) per RU FTP's:

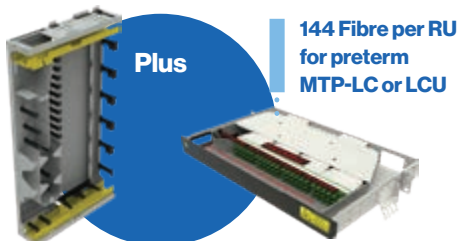
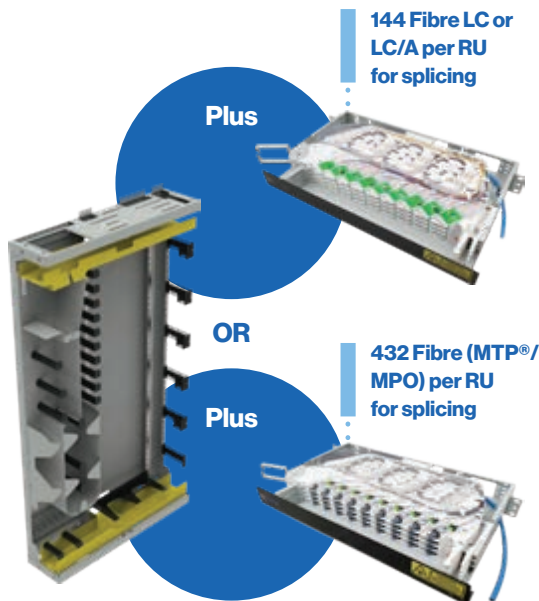
Splicing and patching line cable – High core count flexible ribbon	7106 Series - 432 Fibre (MTP®/MPO), 1RU FTP, swing out
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APPLICATION:

- Rollable Ribbon

ODF AND 7106 SERIES SOLUTION CAPACITY:

- Number of 1RU FTP's per ODF – 36
- Number of tubes / cables per ODF – 36
- Total Number of MTP®/MPO Fibres per ODF (splice & patch) – 15,000+ fibres



Solution for Pre-term MTP®/MPO distribution TC7010 Series - 144 Fibre (LC or LC/A), 1RU	FTP, preterm MTP®/MPO distribution, swing out
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APPLICATION:

- Pre-terminated microcore (MTP®/MPO) cabling

ODF AND TC7010 SERIES SOLUTION CAPACITY:

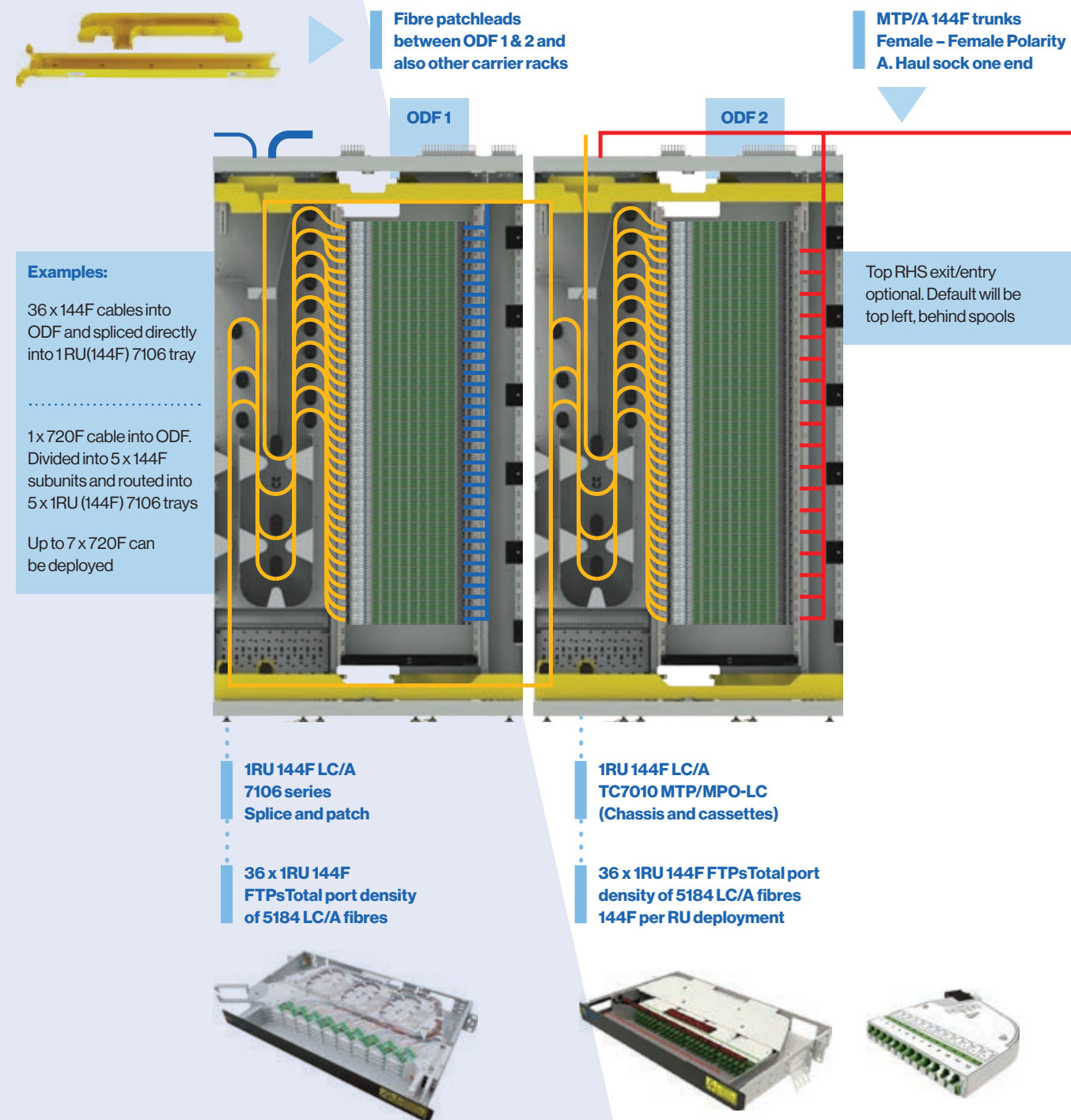
- Number of 1RU FTP's per ODF – 36
- Total Number of LC Fibres per ODF (splice & patch) – 5,184
- Total Number of MTP 12F cords – 456



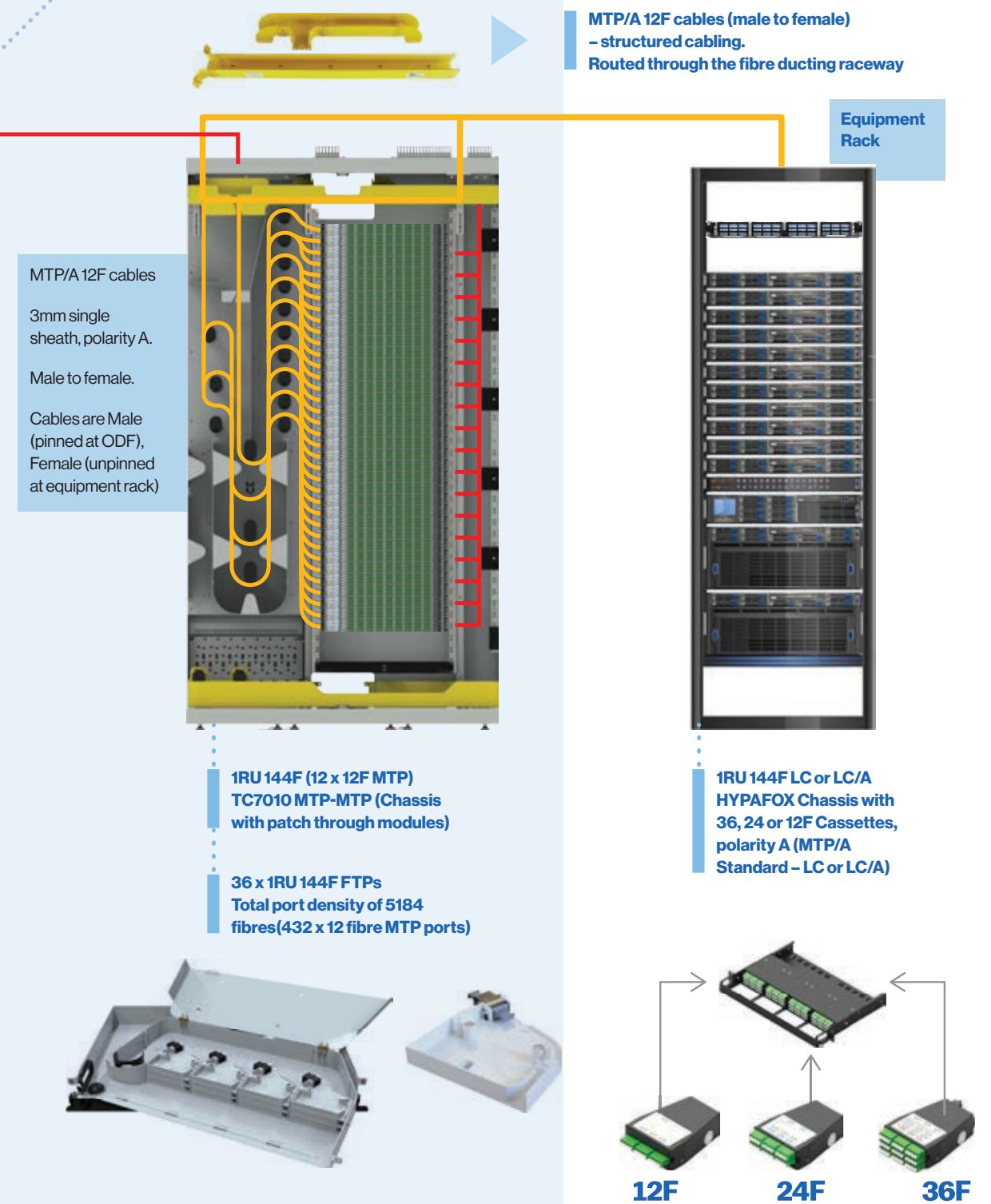
Patch panel and cassette modules used for Customer or Equipment rack deployment	HypaFOX preterm solution: 144F (4 x 36F cassettes) per RU
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* Up to 5,184 LC fibres per ODF deployment

Data Centre Deployment example: MMR and Data Hall zone frame.

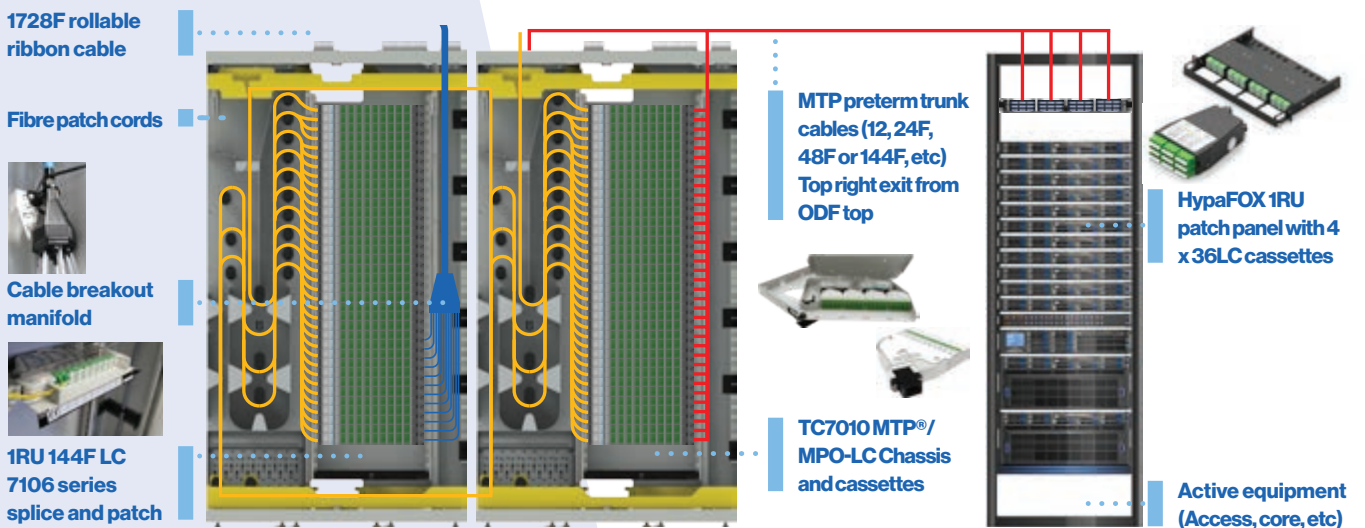


Data Hall Zone frame configuration



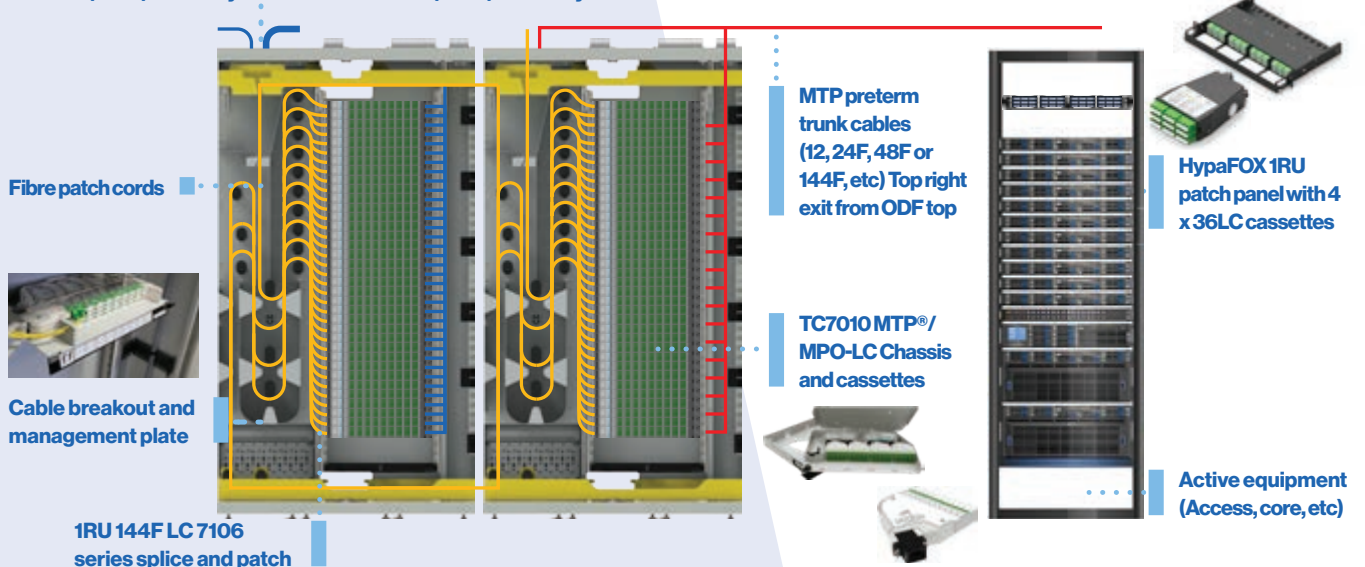
Deployment example: ODF and Data Centre distribution cabling – using 7106 series, TC7010 series and HypaFOX

- 1** This example utilises the top RHS of the ODF for line cable entry (1,728 fibre rollable ribbon cable). This cable can be divided into 12 x 144 fibre tubes and routed into the 1RU 7106 series FTP's. TC7010 series and micro MTP-LC cassettes are used for distribution to equipment racks. HypaFOX MTP®/MPO chassis and cassettes used for top of rack fibre management.



- 2** This example shows 720F or 144F standard loose tube cable, which enters via top left side of the ODF. 144F tubes are presented to each 1RU fibre optic tray. TC7010 series and micro MTP-LC cassettes are used for distribution to equipment racks. HypaFOX MTP®/MPO chassis and cassettes are used for top of rack fibre management.

Multiple 144 cables into ODF and spliced directly into 1RU (144F) 7106 tray or, Multiple x720 cables into ODF, divided into 144F subunits and routed into 1RU (144F) 7106 trays

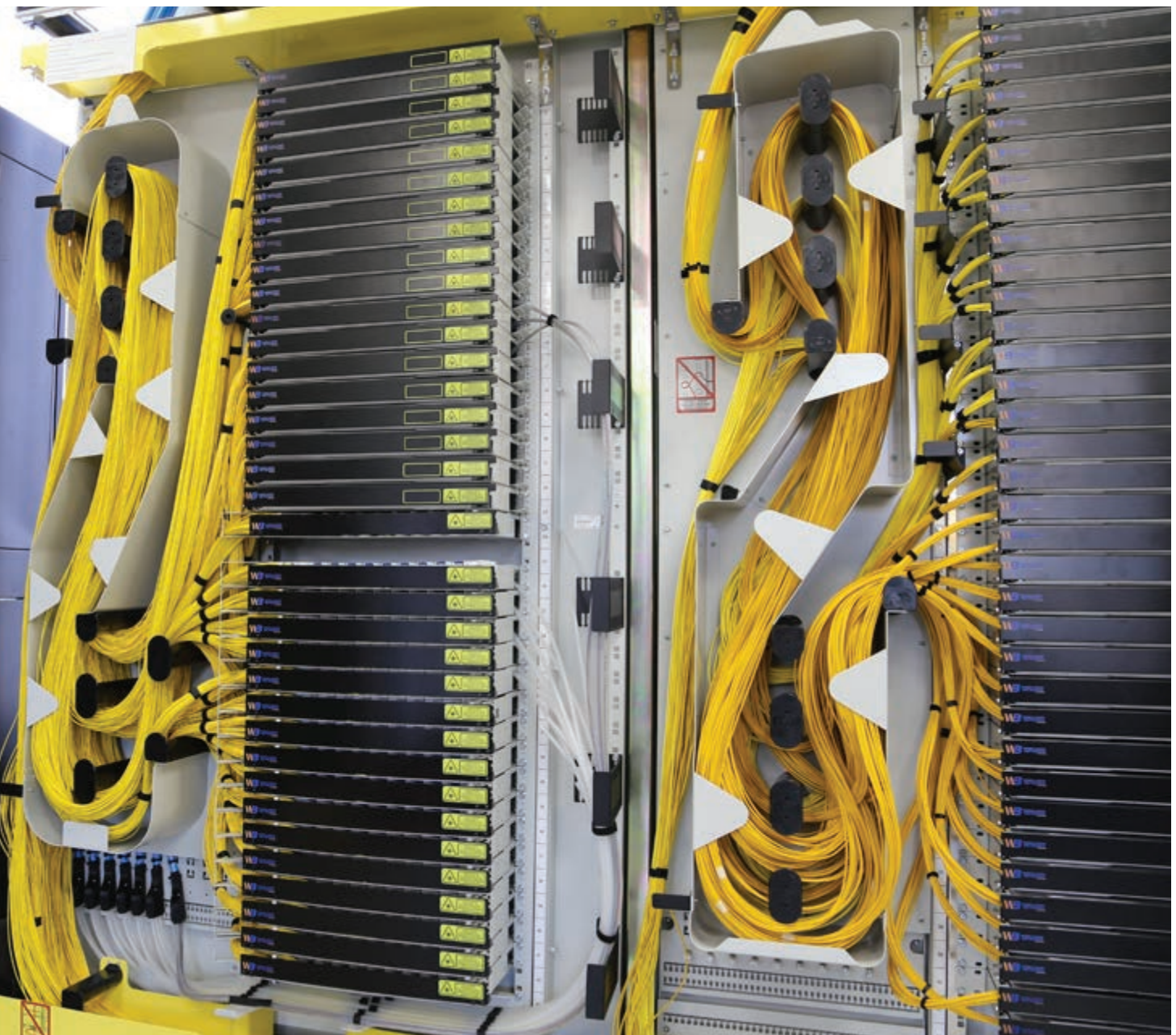


Patch cord management

The left hand side of the ODF is dedicated to optical fibre patch cord management, routing and slack storage. This section of the ODF completely segregates and protects delicate fibre patch leads from other heavier and robust cable types, including line cable and tubes.

It is extremely important in a high density ODF to avoid crossing over and mixing up transport tubes and cable types, as the risk for damage and outages increases when there is no segregation.

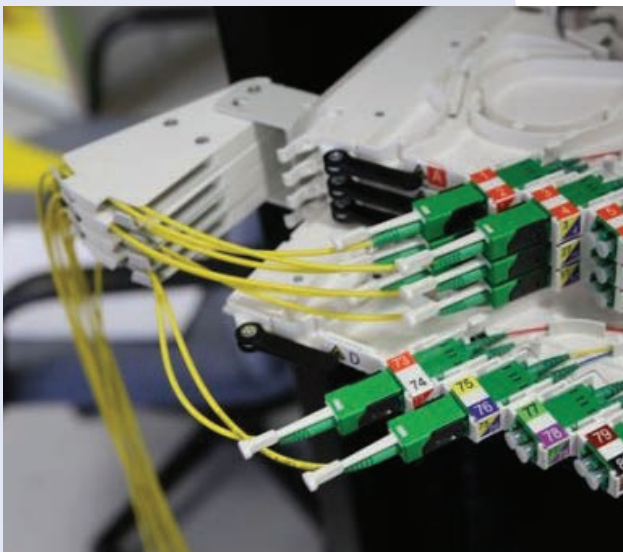
Therefore, segregation of cable types is another important aspect of optimized fibre management and ensuring no damage to delicate optical fibres.





7106 series FTPs

The 7106 Series is an innovative ultra high-density Fibre Termination Panel (FTP), providing up to 144 fibres LC or LC/A ports, splice and patch in only 1RU. Suitable for deployment in WBT 300mm deep ODF's or standard equipment racks, this solution provides unmatched density and usability.



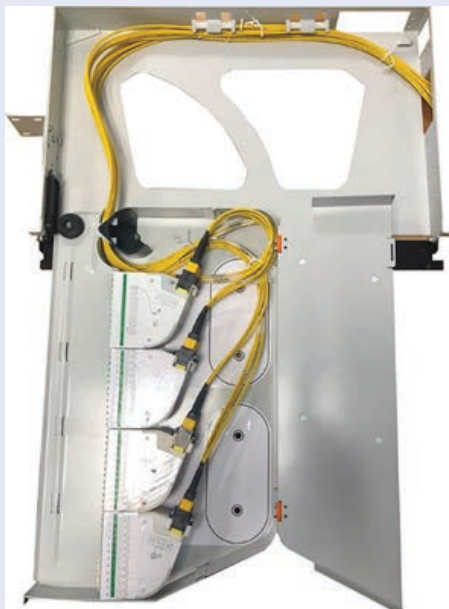
7006 series FTPs

This high-density 1RU up to 96-fibre splice &/or patch shelf is loaded with 4 sub trays. Each sub tray can be equipped with 24 LC/APC or LC/UPC pigtails and 12 LC duplex adaptors. The shelf can accommodate max. 4 splice &/or patch trays with a total max. capacity of 96 LC connections.

The sub trays slide independently on side rails with a locking step at 40mm for patch management at the front. This provides excellent cable management and access to each row of connectors.

The outgoing patch cords are managed with an individual releasable cable management bracket, securing 24x patch cords per tray.

When installed in a chassis, each tray can slide out 40mm from home position, making patch cords installation easy, eliminating the need for pull-tab connectors.



TC7010 series FTP

The TC7010 series fibre optic trays and cassettes are a modular, pre-terminated 12F MTP/MPO cassette based solutions, providing a total fibre port capacity of 144 Fibres in 1RU of rack space.

Line cable and tube management

Ensuring the ODF has the capacity to not only bring in high density cables, but also breakout and manage each tube is extremely important.

With the WBT ODF, cable entry is possible from the top left or right, or bottom left.

For stranded loose tube cable, the cable enters via the top left side and runs down a separate channel behind the fibre management spools. The cable is then divided/broken out onto the Cable Breakout Plate (CBP) into smaller transport tubes and routed along the bottom tube support plate and up the right hand channel into the fibre trays.

For rollable ribbon cables, the cable enters from the top RHS of the ODF and can be broken out within the ODF, with each tube (sub-unit) being securely routed into each FTP. An example of this is shown below, with 3 x 1728F rollable ribbon cables being divided and distributed into each FTP.



Example of bottom left cable entry and breakout for stranded fibre



Products for the end to end solution

One of the main benefits of the WBT ODF single sided access solution, is its ability to be placed against walls, back to back (1200 x 600mm), or at the end of aisles, requiring minimal floor space. These are leading edge and proven advanced solutions, with similar variations of the footprints currently being deployed with major telecommunication carriers.

Many variations are available of the WBT optical distribution frames, however the recommended product for Data Centre and Telecom Exchange applications is as follows:

- 1200mm (W) x 300mm (D) x 2200mm (H). Shallow depth footprint. Shorter 1950mm high ODF also available
- High density port count, based on LC/APC or LC/PC connectivity, thereby significantly reducing floor space and associated lease costs within the DC environment
- Premium fibre cable management. Simplified splicing, patching and cable management
- Optimized balance between density and usability, thereby minimizing points of failure and operational risks
- Various patch cord and connectivity options
- ODF suitability and compatibility with high density cable sizes for future expansion
- 1RU and 2RU subracks / FTP's providing capacity of:
 - 96 fibres, LC or LC/A ports per RU
 - 144 fibres, LC or LC/A ports per RU, stranded or rollable ribbon fibre
 - 432 fibres, MTP®/MPO per RU, using rollable ribbon fibre
- 1RU and 2RU MTP®/MPO chassis for modular cassettes and pre-terminated cable solutions with 96 fibres and 144 fibres per RU
- Consideration of end to end network requirements and solutions proposal including ODFs, fibre rings, fibre splice/patch panels, patch leads, accessories, etc.
- ODF has internal cross patching flexibility to allow for easy transition from external cable to internal tie cables
- Internal ducting (top & bottom) and pathways for ODF side by side and back to back installation and patch cord routing
- Various door locking and security options, including electronic locks or open (no doors or side panels)
- The central rack area holds up to 36 x 1RU subrack/panels, which are available separately
- 21" Rails for high density application while still allowing 19" mounting
- Cable slack management provided (can accommodate a maximum of 4.1m patch cord overlength)
- Available in three colours – Light Grey (RAL 7035), Traffic White (RAL 9016), Black (RAL 9005)
- Provided with full installation guidelines and compatible with ultra high density fibre patch panels
- Designed and manufactured in Australia

- **Optical Distribution Frames (ODFs)**
- **Fibre Termination Panels (FTP's)**
- **Patching and cabling distribution systems**
- **Trunk cabling**
- **Patch leads**
- **Ducting Raceway**

310 series ODFs

300mm deep, single sided access



Dimensions 1,200mm (w) x 300mm (d) x 2,200mm (h)

Application Telecom Carrier Network
Data Centre meet me room
Fibre entrance facility/room

Function:

- Used with legacy 6008, 6010 series FTP's, or 7006 and 7016 series FTP's (High density solution)
- Larger patching management area (450mm wide)
- Larger patch-cord overhead duct entry into rack (220 x 100mm)
- Cable break-outs at subrack level – caters for up to 720 fibre cables, as well as rollable ribbon cables (864, 1728, 3456F)

Features & benefits:

- The central rack area holds up to 19 x 2RU or 36 x 1RU subrack/panels, which are available separately
- 21" Rails for high density application while still allowing 19" mounting
- Integrated internal ducting for ODF suite deployment (back to back and/or side to side)
- Can be installed under superstructure or stand alone
- Cable slack management provided (can accommodate a maximum of 1.1m patch cord overlength)
- ODF suitability and compatibility with high density cable sizes for future expansion
- 1RU and 2RU subracks / FTP's providing capacity of:
 - 96 fibres, LC or LC/A ports per RU
 - 144 fibres, LC or LC/A ports per RU
 - 432 fibres, MTP/MPO per RU, using rollable ribbon fibre
 - 1RU and 2RU MTP/MPO chassis for modular cassettes and pre-terminated cable solutions with 96 fibres and 144 fibres per RU

PART NO.	DESCRIPTION
TC4050310W	ODF, Powder coated, RAL 9016 (Traffic White)
TC4050310E	ODF, Powder coated, RAL 7035 (Light Grey)

Accessories:

PART NO.	DESCRIPTION
TC4050-170KITW1	Security electronic door set 1.2m wide, RAL 9016 traffic white
TC4050-170KIT	Security electronic door set 1.2m wide, RAL 7035 light grey
TC4050-170MKITE	Door set 1.2m wide, with standard two point lock, RAL 7035 light grey
TC4050-194EKIT	Side panel kit, RAL 7035 light grey
TC4050-194W1	Side panel kit, RAL 9016 traffic hite



TC4050310E
shown

314 & 315 series ODF
300mm deep, semi internal cross connect,
single sided access



Dimensions	1,200mm (w) x 300mm (d) x 2,200mm (h)
Application	Telecom Infrastructure and Data Centre - Splice and Patch, Cross Connect, Internal Distribution, Meet me Room (MMR), Internal and zone distribution cabling

The 314 / 315 series ODF is a leading edge solution, which can be configured to support a variety of applications, including ultra high density splice/ patch of incoming line cable, or as a patching / distribution frame.

This ODF can be configured for top and bottom internal cross connects within a single ODF. As an example, various FTP's can be deployed in the bottom half of the ODF for incoming line cable, whilst the top half FTP's can be configured for outgoing distribution cabling, using a preterm MTP solution. There are many other deployment options, as this ODF can be easily configured by using a variety of FTP's.

The internal fibre spool arrangements have been optimised to provide maximum capacity for storage and cross connects within the ODF.

Therefore, most patchleads would route internally in the ODF, with only trunk, distribution or line cable exiting/entering the ODF. However, there is also provision for some patchcords to exit/enter the ODF if required.

One of the main benefits of the WBT ODF single sided access solution, is its ability to be placed against walls, back to back, or at the end of aisles, requiring minimal floor space.

PART NO.	DESCRIPTION
TC4050314E	UHDODF 1200mm x 300mm x 2200mm, internal cross connect, 21" rails
TC4050315E	UHDODF 1200mm x 300mm x 2200mm, internal cross connect (top internal duct), 21" rails

PART NO.	DESCRIPTION
TC4050-170DCKITE	Door and side panel kit to suit 313 series ODF
TC4050-349KIT-GY10	Duct cover side panels for 313 series ODF
TC4050TMKIT	Underfloor mounting kit for HDODF
105X49-L2.5	Black transport tubing, 6.5 OD, 4.5 ID L=2.5M



TC4050314E shown



TC4050315E shown

313 series ODF

300mm deep, single sided access



Dimensions 1,200mm (w) x 300mm (d) x 2,200mm (h)

Application Telecom Infrastructure and Data Centre - Splice and Patch, Cross Connect, Internal Distribution, Meet me Room (MMR), Internal and zone distribution cabling

The 313 series ODF is a leading edge solution, which can be configured to support a variety of applications, including ultra high density splice/patch of incoming line cable, or as a patching / distribution frame.

This flexible solution can be deployed in a telecom carrier exchange, or in a Data Centre environment (MMR, cross connect frame, zone distribution frame).

One of the main benefits of the WBT ODF single sided access solution, is its ability to be placed against walls, back to back, or at the end of aisles, requiring minimal floor space.

Features & benefits:

- High density port count, based on LC/APC or LC/PC connectivity, thereby significantly reducing floor space and associated lease costs within the DC environment
- Premium fibre cable management. Simplified splicing, patching and cable management
- Optimized balance between density and usability, thereby minimizing points of failure and operational risks
- Various patch cord and connectivity options
- ODF suitability and compatibility with high density cable sizes for future expansion
- 1RU and 2RU subracks / FTP's providing capacity of:
 - 96 fibres, LC or LC/A ports per RU
 - 144 fibres, LC or LC/A ports per RU
 - 432 fibres, MTP/MPO per RU, using rollable ribbon fibre
 - 1RU and 2RU MTP/MPO chassis for modular cassettes and pre-terminated cable solutions with 96 fibres and 144 fibres per RU
- Internal ducting and pathways for ODF side by side and back to back installation and patch cord routing.
- Various door locking and security options, including electronic locks
- The central rack area holds up to 36 x 1RU subrack/panels, which are available separately
- 21" Rails for high density application while still allowing 19" mounting

ODF solution density:

- 96 fibres LC or LC/A per RU solution – 3,456 fibres per single sided 300mm deep ODF
- 144 fibres LC or LC/A per RU solution – 5,184 fibres per single sided 300mm deep ODF mounting



■ TC4050313DCE shown

PART NO.	DESCRIPTION
TC4050313DCE	UHDODF 1200mm x 300mm x 2200mm (top&bottom internal duct), 21" rails

PART NO.	DESCRIPTION
TC4050-170DCKITE	Door and side panel kit to suit 313 series ODF
TC4050-349KIT-GY10	Duct cover side panels for 313 series ODF
TC4050TMKIT	Underfloor mounting kit for HDODF
105X49-L2.5	Black transport tubing, 6.5 OD, 4.5 ID L=2.5M

312 series ODF

300mm deep, single sided access

Dimensions	1,200mm (w) x 300mm (d) x 1,950mm (h)
Application	Data Centre - Splice and Patch, Cross Connect Intra-rack patching and cross connects

The 312 series ODF is a leading edge solution, which can be configured to splice/patch incoming line cable, as well as performing intra-rack cross patching. The bottom half of the ODF can be dedicated to splicing incoming line cable, proving a virtual demarcation point, while the top half of the ODF can be used for distribution cabling. All patching and patchcord routing is internal to the ODF, with sufficient slack storage for excess fibre patch cord lengths.

Suitable for use in a Data Centre environment, the lower 1,950mm height also enables it to be mounted underneath many low profile superstructures or enclosed cages. Furthermore, this ODF can be used solely for pre-terminated patching and distribution of internal cabling.

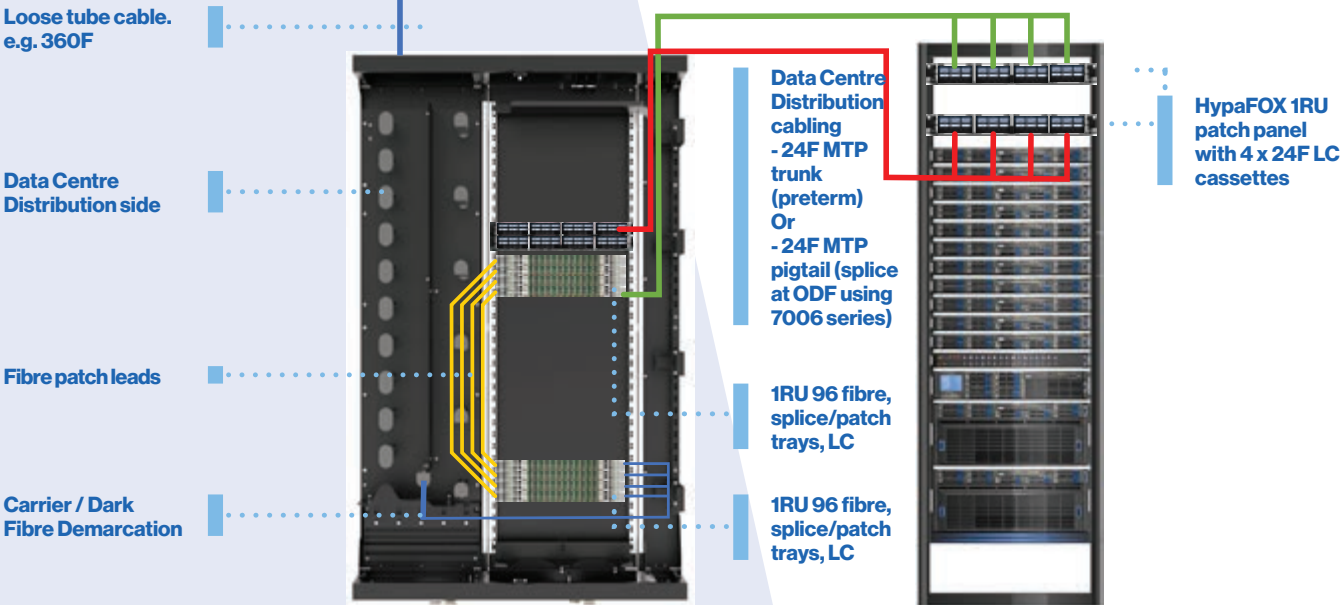
Features & benefits:

- Shallow depth footprint.
- Smaller footprint which condenses fibre management into a single ODF and is suitable for where there is minimal space. Bottom half of ODF is used for line cable splice/patch, and top half of ODF is used for distribution cabling
- ODF can accommodate patch only preterm solutions utilizing WBT HypaFOX modules, or splice/patch 7006 series for Data Centre distribution cabling
- Full front access narrow depth 300mm ODF
- Slack management for patchleads provided
- Also suitable for patching and distribution of internal cabling only

TC4050312BDC shown



PART NO.	DESCRIPTION
TC4050312BDC	UHD Optical Distribution Frame, Black - 21" Mount, Offset (includes all access)
PART NO.	DESCRIPTION
TC4050-360MKITB	Doors & side panels to suit 1950mm high ODF. Black
TC4050TMKIT	Underfloor mounting kit for HDODF
105X49-L2.5	Black transport tubing, 6.5 OD, 4.5 ID L=2.5M



200 series ODF

300mm deep, single sided access



Dimensions 600mm (w) x 300mm (d) x 2,200mm (h)

Application Telecom Carrier Network
Data Centre meet me room
Fibre entrance facility/room

The 200 series ODF range is a 19" rear mounting configuration rack (with or without optional side panels and/or doors). Two frames can be installed back to back and can easily be added / integrated to an existing 1200mm wide or 600mm wide ODF installations.

- Compatible with left pivot swing trays

Features & benefits:

- Up to 648 fibre terminations (9 x 72F 2RU SC/A patch panels) with overhead cable entry and 576 fibre terminations (8 x 72F 2RU SC/A patch panels) with underfloor cable entry.
- Accepts loose / tight buffered cable types from 12 fibres up to 720 fibres in addition to ribbon fibre cables containing tubes up to 72F
- Stand alone or optical suite deployment
- Accepts a variety of left hand pivot, 19", rear mount, 2RU 6008 series WBT patch panels
- Optional 2-point locking doors, and side panels
- Can accept up to 10 x 144F IRU High density FTP's (7106 series), providing total capacity of 1440 LC fibres.

2 x TC4050200 back to back
with optional side panels,
doors and installed subracks

TC4050200 shown



PART NO.	DESCRIPTION
TC4050200	Loose / tight buffered, ribbon cable ODF

Accessories (available separately):

PART NO.	DESCRIPTION
TC4050-217TKIT	Single HDODF side panel & fasteners
TC4050-121TKIT	2-point locking ODF perforated door (single) 600mm (W)
TC4050TMKIT	Raised floor mounting kit (set of 4 threaded rods, brackets & fasteners)
TC4050-143KIT	ODF WBT base fix to s/structure
105X22X05KIT20MM	OD convoluted tube flex. black 5m
105X30X25KIT16MM	OD convoluted tube flex. black 25m

FTP's (available separately):

PART NO.	DESCRIPTION
60083221269081L	2RU left pivot splice/patch 72 SC/A 19" rear

Other options (6008 series) are also compatible – LC, SC, etc

7006 series FTPs (1RU)

48-96 fibres, splice &/or patch, slide out

This high-density 1RU up to 96-fibre splice &/or patch shelf is loaded with 4 sub trays. Each sub tray can be equipped with 24 LC/APC or LC/UPC pigtails and 12 LC duplex adaptors. The shelf can accommodate max. 4 splice &/or patch trays with a total max. capacity of 96 LC connections.

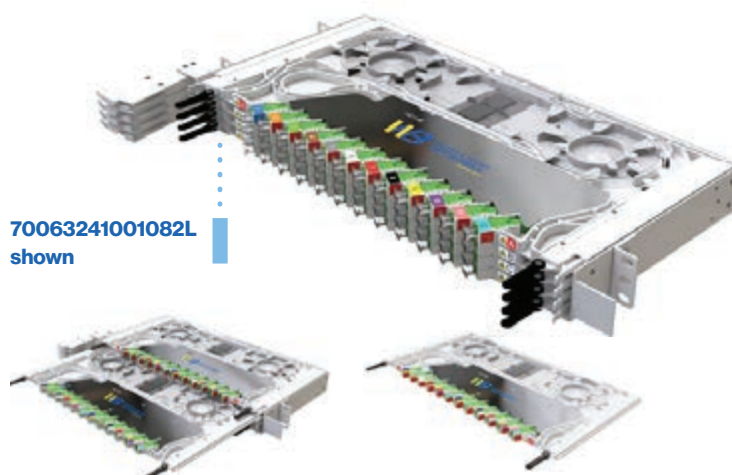
The sub trays slide independently on side rails with a locking step at 40mm for patch management at the front. This provides excellent cable management and access to each rows of connectors.

The outgoing patch cords are managed with an individual releasable cable management bracket, securing 24x patch cords per tray.

When installed in a chassis, each tray can slide out 40mm from home position, making patch cords installation easy, eliminating the need for pull-tab connectors.

Solution for 300mm deep single sided ODF deployment (front tube / cable entry)

- Solution allows for potential ODF deployment of 3,648 LC fibres. Up to 38 x 1RU 96F FTPs
- Left angled adaptors only
- Front tube entry only (individual 24-fibre tubes)
- 48 or 96-fibre options
- Cable entry: Front only
- High-density patch labelling and colour coding for each adaptor
- Possibility of left-hand and right-hand side cable management for patch cords
- Supplied, fully loaded with adaptors and stripped pigtails, ordered as one part number
- Can be supplied with SC/APC, LC/APC or LC/UPC connectivity
- Splice & Patch, Splice only or Patch only versions are available



Singlemode options:

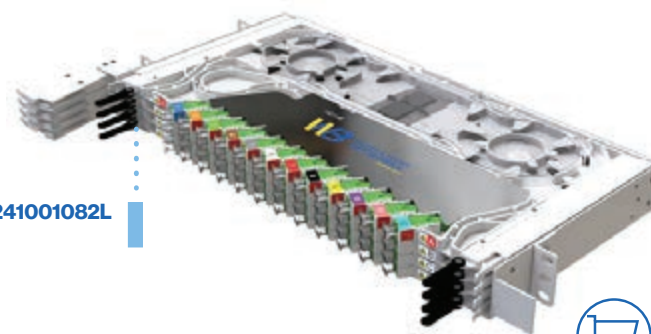
PART NO.	RU	FIBRES	CONNECTORS	DESCRIPTION
70063241046081L	1RU	96	LC/APC Splice & Patch	Left Hand, 21" 50mm offset mounting, all accessories
70063241044081L		96	LC Splice & Patch	Left Hand, 21" 50mm offset mounting, all accessories
70063241042081L		48	LC/APC Splice & Patch	Left Hand, 21" 50mm offset mounting, all accessories
70063241040081L		48	LC Splice & Patch	Left Hand, 21" 50mm offset mounting, all accessories
70063241054081L		48	SC/A Splice & Patch	Left Hand, 19&21" mounting, all accessories
70063241055081R		48	SC/A Splice & Patch	Right Hand, 21" 50mm offset mounting, all accessories
70063244002081R		96	Splice Only	Right Hand, 21" 50mm offset mounting
70063244001081L		96	Splice Only	Left Hand, 21" 50mm offset mounting
70063242005081L		96	LC/APC Patch Only	Left Hand, 21" 50mm offset mounting, all accessories
70063242007081L		96	LC Patch Only	Left Hand, 21" 50mm offset mounting, all accessories

* Multimode OM4 options also available



Solution for standard equipment racks (rear and front tube/cable entry)

- Rear or front tube/cable entry
- Left or right angled adaptors
- 48, 72 or 96-fibre options
- Cable entry: Front and Rear
- High-density patch labelling and colour coding for each adaptor
- Possibility of left-hand and right-hand side cable management for patch cords
- Supplied, fully loaded with adaptors and stripped pigtails, ordered as one part number
- Optional lid and 2RU 19" brackets for 192 fibre OSP cable
- Can be supplied with SC/APC, LC/APC or LC/UPC connectivity
- Splice & Patch or Patch only versions available



70063241001082L shown



Singlemode options:

PART NO.	RU	FIBRES	CONNECTORS	DESCRIPTION
70063242004081R		96	LC Patch only	Right Hand, 19&21" mounting
70063242003081L		96	LC Patch only	Left Hand, 19&21" mounting
70063242002081R		96	LC/APC Patch only	Right Hand, 19&21" mounting
70063242001081L		96	LC/APC Patch only	Left Hand, 19&21" mounting
70063241018081L		96	LC/APC Splice & Patch	Left Hand, 19&21" mounting, all accessories
70063241019081R		96	LC/APC Splice & Patch	Right Hand, 19&21" mounting, all accessories
70063241028081L		96	LC Splice & Patch	Left Hand, 19&21" mounting, all accessories
70063241029081R	1RU	96	LC Splice & Patch	Right Hand, 19&21" mounting, all accessories
70063241038081L		72	LC Splice & Patch	Left Hand, 19&21" mounting, all accessories
70063241036081L		48	LC Splice & Patch	Left Hand, 19&21" mounting, all accessories
70063241024081L		48	SC/APC Splice & Patch	Left Hand, 19&21" mounting, all accessories
70063241025081R		48	SC/APC Splice & Patch	Right Hand, 19&21" mounting, all accessories
70063243003081L		96	LC/APC Patch only preterm	Left Hand, 19&21" mounting, with tail cable
70063243007081L		96	LC Patch only preterm	Left Hand, 19&21" mounting, with 35m tail cable

* Multimode OM4 options also available

Accessories for standard equipment racks solutions

PART NO.	DESCRIPTION
825232401081	Metal Lid to suit 7006 series tray
835632417KIT	Rear cable gland and tube entry kit - v2. Symmetrical. Includes M20 gland
835632419KIT	Rear RH entry - tube breakout/protection. Cable entry from right hand side to breakout tubes Left hand entry. Suitable for LH adaptor fibre trays (L product numbers)
835632420KIT	Rear LH entry - tube breakout/protection. Cable entry from left hand side to breakout tubes Left hand entry. Suitable for RH adaptor fibre trays (R product numbers)
109X102X10KIT	Splice through kit, RED SC adaptor inserts (splice only applications)



7106 series FTPs (1RU) for ODF and Equipment Rack applications

144 fibres, splice & patch, swing out

Application	Rollable ribbon
	Loose tube / stranded fibre cable
	Splicing microcore / distribution cabling

The 7106 Series is an innovative ultra high density Fibre Termination Panel (FTP), providing up to 144 fibres LC or LC/A ports, splice and patch in only 1RU. Suitable for deployment in WBT 300mm deep ODF's or standard equipment racks, this solution provides unmatched density and usability.

- 1RU, LC or LC/A
- Single row fibre access, allowing for easy patching and access to ports. Perfect balance between density and usability
- Models to suit loose tube, stranded fibre or rollable ribbon fibre
- Each 1/4" RU panel row pivots and slides out separately to allow for finger access to each port
- Each LC or LC/A FTP has 4 x 1/4" RU tray, each with a 36-fibre capacity, providing 144F LC or LC/A per RU
- Pivot tray design allows for easy access to splice area
- Innovative pivot and slide function for each row to allow for simplified patching management
- Compatible with WBT ODF systems and patch cords
- Narrow depth – mounts in a 300mm deep rack. Other comparable products require mounting in a 600mm/800mm deep rack
- Supplied fully loaded with adaptors and stripped pigtails, ordered as one part number
- Compact and shallow depth to suit 300mm deep ODF, providing total ODF density of up to 5,472 ports
- 72F SC/A FTP also available

7106 series FTPs (1RU) for ODF and Equipment Rack applications

432 fibres, splice & patch, swing out

Application	Rollable ribbon
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This innovative offering can be used if using ultra high density rollable ribbon fibre (e.g. 864F, 1728F, 3456F), which allows for direct splicing onto MTP connectivity, thereby further increasing density and reducing additional connectors.

- Single row fibre access, allowing for easy patching and access to ports. Perfect balance between density and usability
- MTP / MPO connectivity
- Each 1/4" RU panel row pivots and slides out separately to allow for finger access to each port
- Each 1/4" RU row has a 108-fibre capacity, 432F per RU
- Compatible with WBT ODF systems and patch cords
- Supplied fully loaded with adaptors and stripped pigtails, ordered as one part number



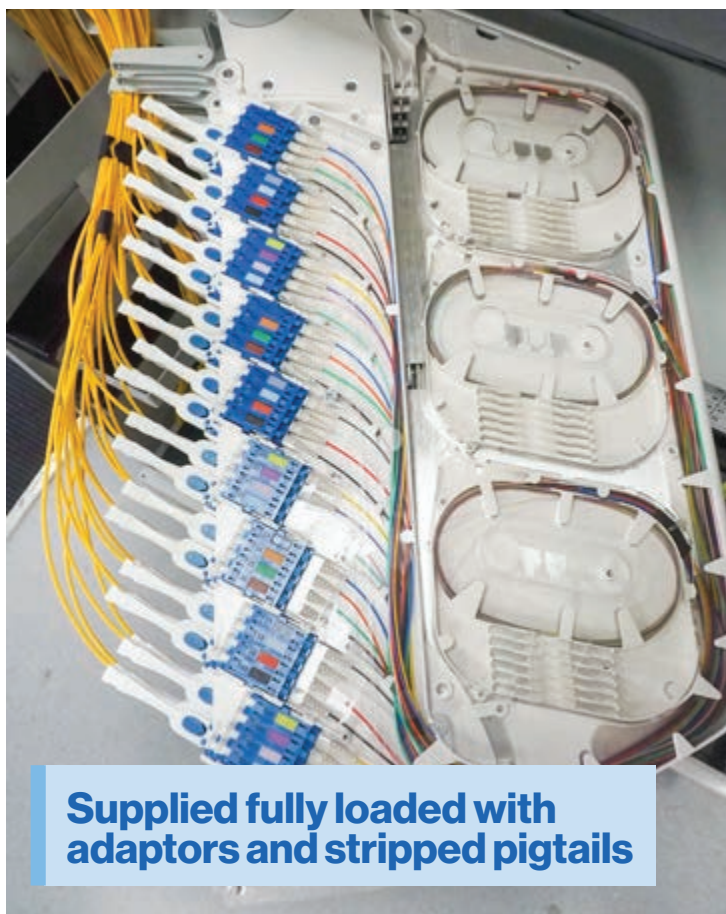
PART NO.	RU	FIBRES	CONNECTORS	DESCRIPTION
71063241008081L			LC Singlemode	Stranded fibre, Splice & Patch, 19&21" mounting
71063241007081L			LC/A Singlemode	Stranded fibre, Splice & Patch, 19&21" mounting
71063241001081L			LC/A Singlemode, Grade A	Stranded fibre, Splice & Patch, 19&21" mounting
71063241010081L			LC Singlemode, Grade A	Stranded fibre, Splice & Patch, 19&21" mounting
71063241011081L	1RU, left pivot	144 fibres	LC Multimode OM4 aqua	Stranded fibre, Splice & Patch, 19&21" mounting
71063241012081L			LC Multimode OM4 violet	Stranded fibre, Splice & Patch, 19&21" mounting
71063241009081L			LC Singlemode	Rollable Ribbon fibre, Splice & Patch, 19&21" mounting
71063241014081L			LC/A Singlemode	Rollable Ribbon fibre, Splice & Patch, 19&21" mounting



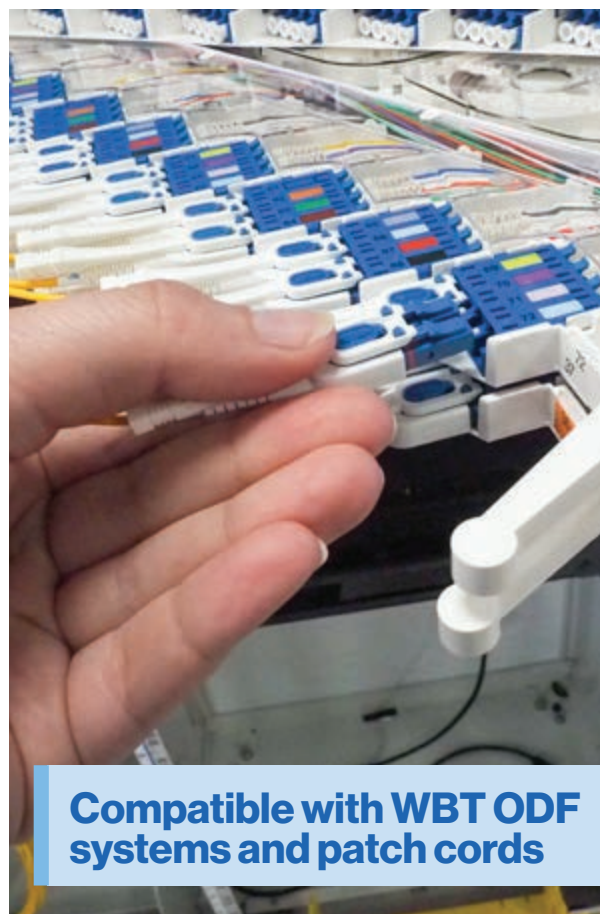
PART NO.	RU	FIBRES	CONNECTORS	DESCRIPTION
71063241013081L	1RU, left pivot	432 fibres	MTP/A Elite Singlemode	Rollable Ribbon fibre, Splice & Patch, 19&21" mounting



Pivot tray design allows for easy access to splice area.



Supplied fully loaded with adaptors and stripped pigtails



Compatible with WBT ODF systems and patch cords

TC7010 series FTPs

144 fibres, splice &/or patch, swing out

Application Pre-terminated microcore (MTP®/MPO) cabling

The TC7010 series fibre optic trays and cassettes are a modular, pre-terminated 12F MTP/MPO cassette based solutions, providing a total fibre port capacity of 144 Fibres in 1RU of rack space.

- Modular chassis/subrack, which accepts 12 x 12F MTP-LC or LC/A mini cassettes
- 1RU density of 144F LC or LC/A fibre optic ports
- Swing out, pivot design. Pivot tray design allows for easy access to rear MTP/MPO patching fields
- Compatible with WBT ODF systems and patch cords
- Improved cable management and reduced congestion when using 2mm duplex uniboot patch leads or 1.6mm simplex patch leads. Need to use low profile LC patch cords
- Narrow depth – mounts in a 300mm deep ODF
- Can be deployed in standard equipment racks with 19" or 21" mounting rails

Solution for preterminated MTP/MPO microcore cabling

The TC7010 Series FTP and MTP-LC cassette solution, can be used for pre-terminated microcore distribution cabling within Data Centre environments.

- 12F stackable MTP cassettes (LC and LC/A), polarity A
- MTP male pinned cassette
- MTP Elite or standard connectivity options
- Modular system allows for scalable network growth
- Excellent cable management and minimal movement with pivot tray design
- Accepts microcore 12F – 144F trunk cables for side or rear tray entry
- Multimode OM4 options also available

Solution for splice and patch flat ribbon cable

This solution is for splicing flat ribbon cable into a high density 1RU FTP.

- 12F stackable MTP cassettes (LC and LC/A), polarity A
- MTP female unpinned cassettes
- 12F ribbon pigtails with MTP/A male (singlemode)
- Stackable splice trays for MTP pigtails
- MTP Elite or standard connectivity options
- Modular system allows for scalable network growth
- Excellent cable management and minimal movement with pivot tray design



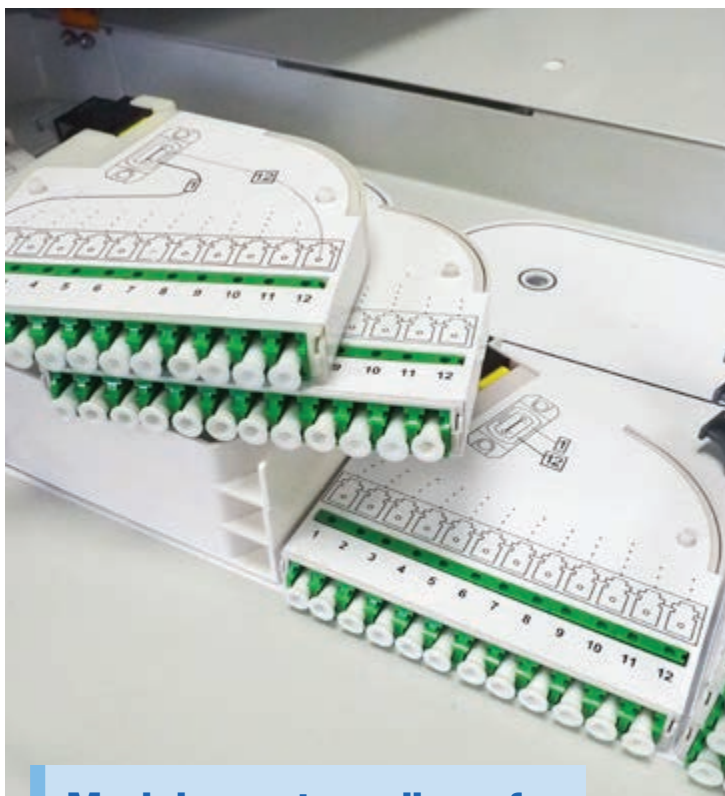
PART NO.	DESCRIPTION
TC7010-01NDC	1RU swing out chassis (empty) for 12 x 12F MTP-LCA micro cassettes, 19" & 21" offset mounting
TC7010-14LCAS	MPO/MTP Angled, Standard- LC/A, 12F cassette, Polarity A (micro cassette)
TC7010-14LCAE	MPO/MTP Angled, Elite - LC/A, 12F cassette, Polarity A (micro cassette)
TC7010-14LCS	MPO/MTP Angled, Standard- LC, 12F cassette, Polarity A (micro cassette)
TC7010-14LCE	MPO/MTP Angled, Elite - LC, 12F cassette, Polarity A (micro cassette)
TC7010-20K	MTP to MTP through cassette (micro) - Polarity A (key up to key down)

PART NO.	DESCRIPTION
TC7010-54	MPO/MTP, Standard LC OM4 multimode aqua, 12F cassette, polarity a (micro cassette)
TC7010-55	MPO/MTP, Elite LC OM4 multimode aqua, 12F cassette, polarity a (micro cassette)
TC7010-56	MPO/MTP, Standard LC OM4 multimode aqua, 12F cassette, polarity b (micro cassette)
TC7010-57	MPO/MTP, Elite LC OM4 multimode aqua, 12F cassette, polarity b (micro cassette)

PART NO.	DESCRIPTION
TC7010-01	1RU swing out chassis (empty) for 12 x 12F MTP-LCA micro cassettes, NBN ribbon fibre
TC7010-14KIT1	LC/A 12 Port G657.B3 HD Patch Cassettes/Splice Trays Kit x 6, female (unpinned) cassettes, polarity A
TC7010-20KIT1	MTP-MTP APC Elite Cassette/ Splice Trays Kit x 6
TC7010-16KIT	Bridge and Spacer Accessory kit
TC7010-14M	MTP/A Elite-LCA 12 Port HD Cassette, female (unpinned), polarity A
TC7010-20	MTP Elite, 12F 1 Port Cassette, key up to key down, polarity A
TC7010-19KIT	Labels kit for TC7010 series solution
6371H057C	Pigtail-MTP Male Elite, Male (pinned), Singlemode G652D, 12F Ribbon, 2400mm length
TC7010-18-2	Ribbon divider
TC250S-35	TC7010 series ribbon fibre splice tray with 4x magnets, splice protector and 2x braided sleeve clips
TC250S-36	TC7010 series ribbon fibre top splice tray with 2x magnets, splice protector and 2x braided sleeve clips
TC7010-06	Front perspex lid
TC7010-17KIT1	Parking bay kit
TC7010-25KIT	144F LC/APC HD cassettes/ribbon splice tray kits x 12
TC7010-10KIT	TC7010 series mounting brackets



Compatible with WBT ODF systems and patch cords



Modular system allows for scalable network growth



Swing out, pivot design. Pivot tray design allows for easy access to rear MTP/MPO patching fields

HypaFOX front access preterm solution for distribution of internal cabling, up to 96 fibres per RU

- For patching / distribution using pre-terminated MTP – LC/A modules
- Distribution of internal cabling – 96 fibres per RU

Similar to the HypaFOX 1RU patch panel used in the equipment rack, this patch panel has a narrow depth, which can mount in a 300mm deep ODF. The front access chassis is available in a 1RU or a 2RU flex version, which has a removable base for easy port access.

This solution utilizes the same modular cassette system deployed in equipment racks for uniformity.

Suitable for either singlemode or multimode fibre distribution. Simply select the appropriate MTP®/MPO cassette.

This provides a secure front patch only solution for all optical ports and is compatible with Warren & Brown ODF's.

The 8 slot 2RU patch panels accept the same footprint HypaFOX cassette. Each cassette has a maximum LC capacity of 24 fibres. 2 x 12 fibre MTP®/MPO ports are located at the front of the cassette.

The total capacity per RU is 96 fibres. With a 2RU subframes / patch panels, the total capacity is 192 fibres.

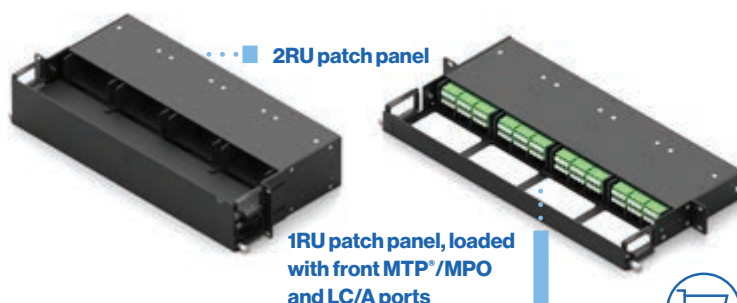
This is part of an innovative solution, which simplifies Data Centre operations and cable management.

**To see other options for HypaFOX patch panels (chassis) accessories, patch modules and cable assemblies please view our website or catalogue*

MTP®/MPO to LC or LC/A front access singlemode cassettes

- Features singlemode G657A2 fibre as standard
- G652D fibre option also available
- Standard or elite MTP®/MPO connectors at the front of cassette
- High performance LC or LC/APC connectors at the front
- Choice of fibre capacity - 12F and 24F
- 8 fibre and 16 fibre options also available
- Polarity A or B
- Suitable for use with any HypaFOX patch panel, including 300mm deep rack version
- Designed for use when rear cable access is not possible
- Choice of extreme low loss Grade A LC/APC connectors

** Multimode cassettes are also available in OM4 violet*



PART NO.	DESCRIPTION
HXTG13U1W5	1RU Slim flex panel, 21" offset, 4-slot, grey
HXTS13U1W1	1RU Slim flex panel, 19", 4-slot, black
HXTG13U1W1	1RU Slim flex panel, 19", 4-slot, grey
HXTG13U2W5	2RU Slim flex panel, 21" offset, 8-slot, grey



24 Fibre cassette with 2 x 12 front MTP®/MPO adaptors and 24 LC/A adaptors



PART NO.	DESCRIPTION
HXCS03K4G2Z5P3	MTP/MPO Elite cassette (front access) 24F, LC singlemode polarity A
HXCS05K4G2Z5P3	MTP/MPO Elite cassette (front access) 12F, LC singlemode polarity A
HXCS03K4G2Z2P3	MTP/MPO standard cassette (front access) 24F, LC singlemode polarity A
HXCS05K4G2Z2P3	MTP/MPO standard cassette (front access) 12F, LC singlemode polarity A
HXCS03K5G2Z5P3	MTP/MPO Elite cassette (front access) 24F, LC/A singlemode polarity A
HXCS05K5G2Z5P3	MTP/MPO Elite cassette (front access) 12F, LC/A singlemode polarity A
HXCS03K5G2Z2P3	MTP/MPO standard cassette (front access) 24F, LC/A singlemode polarity A
HXCS05K5G2Z2P3	MTP/MPO standard cassette (front access) 12F, LC/A singlemode polarity A



24 Fibre cassette with 2 x 12 front MTP®/MPO adaptors and 24 LC/A adaptors



PART NO.	DESCRIPTION
HXCS03K6G2Z5P3	MTP/MPO Elite cassette (front access only) 24F, LC multimode OM4 aqua, polarity A
HXCS03K6G2Z6P1	MTP/MPO Elite cassette (front access only) 24F, LC multimode OM4 aqua, polarity B
HXCS01K6G2Z3P3	MTP/MPO Standard cassette 36F, LC multimode OM4 aqua, polarity A
HXCS01K6G2Z3P1	MTP/MPO Standard cassette 36F, LC multimode OM4 aqua, polarity B
HXCS03K6G2Z3P3	MTP/MPO Standard cassette (front access only) 24F, LC multimode OM4 aqua, polarity A
HXCS03K6G2Z3P1	MTP/MPO Standard cassette (front access only) 24F, LC multimode OM4 aqua, polarity B

HypaFOX solution for equipment racks, up to 144 fibres per RU

Equipment racks - top of rack infrastructure

To complete the end to end fibre network and access to active equipment, or to simply provide connectivity between active equipment using direct links, the 1RU HypaFOX modular solution is also an excellent solution, providing industry leading usability and density of up to 144LC ports per RU.

Data centre side – Fibre MTP®/MPO trays and cassettes

- High density port count, 4 slot 1RU chassis
- LC/PC connectivity, 36F MTP®/MPO cassette based solution. Lower density 24F cassettes available
- Using 4 x 36F MTP®/MPO cassettes, the maximum density per RU is 144 fibres
- Using 4 x 24F MTP®/MPO cassettes, the maximum density per RU is 96 fibres
- Other options include MTP®/MPO patching modules – 9 port per cassette, 36 port per RU, or up to 432 fibres per RU

**To see options for HypaFOX patch panels (chassis) accessories, patch modules and cable assemblies please view our website or catalogue*

MTP®/MPO to LC or LC/A singlemode cassettes

- Features singlemode G657A2 fibre as standard
- G652D fibre option also available
- Standard or elite MTP®/MPO connectors
- High performance LC/APC connectors
- Choice of fibre capacity - 12F, 24F and 36F
- 8 fibre and 16 fibre options also available
- Polarity A (other polarity options are available)
- MTP®/MPO connectors at rear of cassette
- Choice of extreme low loss Grade A LC/APC connectors
- Multimode cassettes are also available in OM4 violet

**SC and SC/A options and other Multimode cassettes are also available*

1RU patch panel, loaded with cassettes with MTP®/MPO and LC/A ports



PART NO.	DESCRIPTION
HXTS02U1W1	1RU panel, 19", 4-slot, black
HXTS02U1W2	1RU panel, 21", 4-slot, black
HXTS12U1W1	1RU panel, 19", 4-slot, flex, black
HXTS12U2W1	2RU panel, 19", 8-slot, flex, black



36 Fibre cassette with 3 x 12 rear MTP®/MPO adaptors and 36 LC/A adaptors

PART NO.	DESCRIPTION
HXCS01K4G2Z5P3	MTP/MPO Elite cassette 36F, LC singlemode polarity A
HXCS02K4G2Z5P3	MTP/MPO Elite cassette 24F, LC singlemode polarity A
HXCS04K4G2Z5P3	MTP/MPO Elite cassette 12F, LC singlemode polarity A
HXCS01K4G2Z2P3	MTP/MPO standard cassette 36F, LC singlemode polarity A
HXCS02K4G2Z2P3	MTP/MPO standard cassette 24F, LC singlemode polarity A
HXCS04K4G2Z2P3	MTP/MPO standard cassette 12F, LC singlemode polarity A
HXCS01K5G2Z5P3	MTP/MPO Elite cassette 36F, LC/A, singlemode polarity A
HXCS02K5G2Z5P3	MTP/MPO Elite cassette 24F, LC/A, singlemode polarity A
HXCS04K5G2Z5P3	MTP/MPO Elite cassette 12F, LC/A, singlemode polarity A
HXCS01K5G2Z2P3	MTP/MPO standard cassette 36F, LC/A, singlemode polarity A
HXCS02K5G2Z2P3	MTP/MPO standard cassette 24F, LC/A, singlemode polarity A
HXCS04K5G2Z2P3	MTP/MPO standard cassette 12F, LC/A, singlemode polarity A



36 Fibre cassette with 3 x 12 rear MTP®/MPO adaptors and 36 LC/A adaptors

PART NO.	DESCRIPTION
HXCS01K6G2Z6P3	MTP/MPO Elite cassette 36F, LC multimode OM4 aqua, polarity A
HXCS01K6G2Z6P1	MTP/MPO Elite cassette 36F, LC multimode OM4 aqua, polarity B
HXCS02K6G2Z6P3	MTP/MPO Elite cassette 24F, LC multimode OM4 aqua, polarity A
HXCS02K6G2Z6P1	MTP/MPO Elite cassette 24F, LC multimode OM4 aqua, polarity B
HXCS02K6G2Z3P3	MTP/MPO Standard cassette 24F, LC multimode OM4 aqua, polarity A
HXCS02K6G2Z3P1	MTP/MPO Standard cassette 24F, LC multimode OM4 aqua, polarity B



Fibre Patch Cords

Every connector assembly supplied by WBT is made using quality parts in a high quality termination facility, according to recognised and approved international standards.

The quality and inspection procedures employed, ensure only high quality, individually inspected and approved pigtails and patch cords are supplied. Therefore, customers can have confidence knowing that the product supplied will perform reliably to a high standard in the telecommunications and data networks for many years. Each patch cord is individually inspected and tested at the time of production.

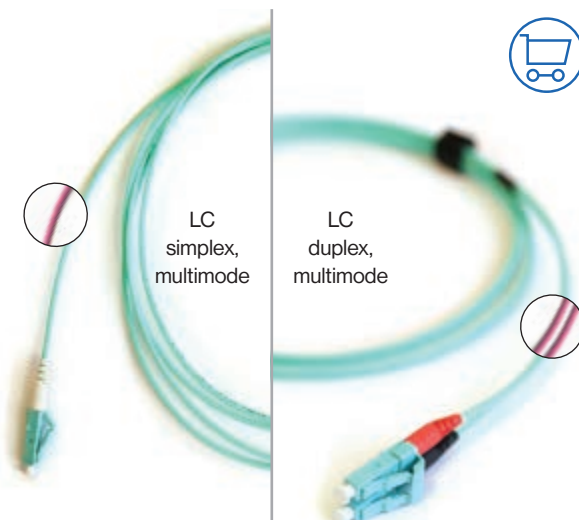
- Singlemode G657A2, G652D or multimode OM4 fibre options
- Simplex, duplex as well as multi-fibre patch cord options
- LSZH sheath
- Complies with ANSI, Bellcore, TIA / EIA, IEC standards
- Factory terminated and tested
- Choice of connector types - LC, LC duplex, SC/UPC, SC/APC, etc
- Reduced diameter LC duplex uniboot patch cord options
- Various patch cord lengths
- Fast delivery and stock availability

T99 series Multimode OM4 patch cords

- Connector types - LC, LC duplex, SC, SC duplex, ST, FC
- OM4 fibre as standard (OM3 also available)
- Low loss connectors for high performance and reliability
- Multi-fibre patch cord options available
- Available colours - Aqua, Violet

Multimode connectors performance information:

	SC	ST	FC	LC
FERRULE	2.5 mm dia Zirconia	2.5 mm dia Zirconia	2.5 mm dia Zirconia	1.25 mm dia Zirconia
STANDARD POLISH	UPC	UPC	UPC	UPC
INSERTION LOSS	0.2 dB typ 0.3 dB max	0.2 dB typ 0.4 dB max	0.2 dB typ 0.3 dB max	0.2 dB typ 0.3 dB max
RETURN LOSS	35 dB	35 dB	35 dB	35 dB
TERMINATIONS	>500	>500	>500	>500
SERVICE TEMP °C	-20 to +60	-20 to +60	-20 to +60	-20 to +60

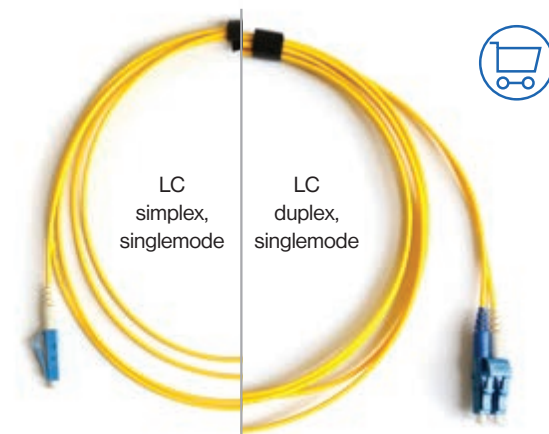


T99 series Singlemode patch cords

- Connector types - LC, LC duplex, LC/A, SC, SC duplex, SC/A, SC/A duplex, ST, FC
- Bend insensitive G657A2 fibre as standard (G652D also available)
- Low loss connectors for high performance and reliability
- Extreme low loss Grade A connector options available
- Multi-fibre patch cord options available

Singlemode connectors performance information:

	SC	ST	FC	LC	LC/A	SC/A
FERRULE	2.5 mm dia Zirconia	2.5 mm dia Zirconia	2.5 mm dia Zirconia	1.25 mm dia Zirconia	1.25 mm dia Zirconia end angle 8°	2.5 mm dia Zirconia end angle 8°
STANDARD POLISH	UPC	UPC	UPC	UPC	APC	APC
INSERTION LOSS	0.2 dB typ 0.3 dB max	0.2 dB typ 0.4 dB max	0.2 dB typ 0.3 dB max	0.2 dB typ 0.3 dB max	0.2 dB typ	0.2 dB typ
RETURN LOSS	≤50-55 dB	≤50-55 dB	≤50-55 dB	≤50-55 dB	≤60-65 dB	≤60-65 dB
TERMINATIONS	>500	>500	>500	>500	>500	>500
SERVICE TEMP °C	-20 to +60	-20 to +60	-20 to +60	-20 to +60	-20 to +70	-20 to +70



Singlemode Grade A connectors performance information:

	INSERTION LOSS	INSERTION LOSS (MEAN OF 20 RANDOM MATING)	RETURN LOSS (MATED OR NOT)	INPUT POWER CAPABILITY
A/SC ANGLED CONNECTOR	(1260-1625 nm) (dB) Max 0.15	(1260-1625 nm) (dB) Avg 0.07	(1260-1625 nm) (dB) Max ≥65	(dBm) Max +27**
SC UPC	(1260-1625 nm) (dB) Max 0.15	(1260-1625 nm) (dB) Avg 0.07	(1260-1625 nm) (dB) Max ≥50	(dBm) Max +27**
FC UPC	(1260-1625 nm) (dB) Max 0.15	(1260-1625 nm) (dB) Avg 0.07	(1260-1625 nm) (dB) Max ≥50	(dBm) Max +27**
E2000 UPC	(1260-1625 nm) (dB) Max 0.15	(1260-1625 nm) (dB) Avg 0.07	(1260-1625 nm) (dB) Max ≥50	(dBm) Max +27**
LC APC	(1260-1625 nm) (dB) Max 0.15	(1260-1625 nm) (dB) Avg 0.07	(1260-1625 nm) (dB) Max ≥65	(dBm) Max +27**
LC UPC	(1260-1625 nm) (dB) Max 0.15	(1260-1625 nm) (dB) Avg 0.07	(1260-1625 nm) (dB) Max ≥50	(dBm) Max +27**
DIN 47256***	(1310-1550 nm) (dB) Max 0.4	(1310-1550 nm) (dB) Avg 0.2	(1310 nm) (dB) Max ≥50-55	



SC UPC Grade A connector shown

Note

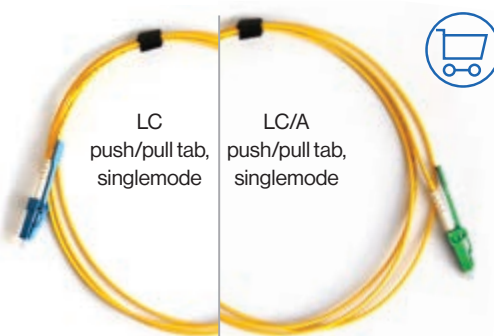
* Grade A connectors have not yet been ratified by the standard bodies

** Max. input power can only be applied, if connector end faces are absolutely clean

*** DIN47256 connector is not to be used as Grade A* connector

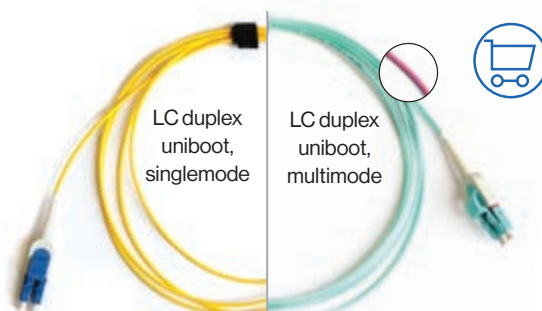
T99 series LC or LC/A Simplex push/pull tab patch cords

- Singlemode G657A2 LC or LC/A
- Push/pull tab allows for easy connection and disconnection around congested patching areas



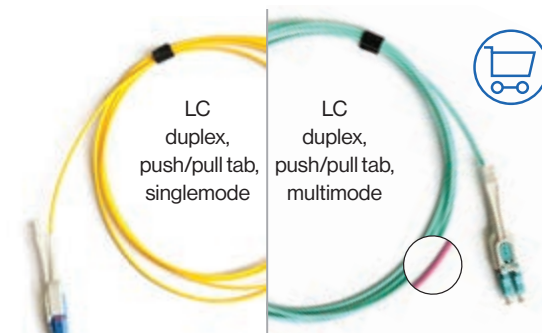
T99 series LC-LC Duplex uniboot, reversible polarity patch cords

- Singlemode G657A2 or multimode OM4 aqua or violet fibre options
- Uniboot, slim cable design. 2mm OD for duplex cable



T99 series LC-LC Duplex uniboot, reversible polarity push/pull tab patch cords

- Singlemode (G657A2) or multimode OM4 aqua or violet fibre options
- Uniboot, slim cable design 2mm OD for duplex cable
- Push/pull tab allows for easy connection and disconnection around congested patching areas



MTP®/MPO Trunk Cables and Patch cords

In addition to providing a high density solution for optical fibre networks, one of the other major benefits of an MTP®/MPO cabling system, is its modularity and its ability to support high speed links.

New links can be easily added and the network can also be upgraded to support higher networking speeds – 40G, 100G, etc. Furthermore, the fibre cable construction has a smaller OD than regular fibre optic cable, which reduces cable load in raised floors and cable ducts, as well as reducing congestion.

HXF Series 12 to 144F MTP trunk cables

Either 12, 24, 36, 48, 72, 96 or 144 fibre MTP®/MPO trunk cables can be routed from the main distribution ODF to the equipment racks.

The MTP®/MPO trunk cable can be pre-terminated on each end, which will cable runs to be pre-measured and cables manufactured to that exact length. As an alternative, the equipment rack end may be preterm MTP®/MPO and the ODF end may be spliced into FTP, instead of HypaFOX cassette.

- Singlemode G657A2 or Multimode OM3 / OM4
- Singlemode MTP/A standard or Elite connectors
- Multimode MTP/A standard or Elite connectors
- Hauling sock and deployment reel options
- LSZH outer sheath
- Made to length
- Polarity A for singlemode. Polarity A or B for multimode
- 3mm OD internal subunits & 2mm OD subunits available for 144F trunk cable assemblies for space saving in cable pathways.

HXH Series 12F MTP patch cables

- Singlemode G657A2 or Multimode OM3 / OM4
- Singlemode MTP/A standard or Elite connectors
- Multimode MTP/A standard or Elite connectors
- 4.5mm outer diameter for double sheath trunk cable or 3mm outer diameter for single sheath cable
- LSZH outer sheath
- Made to length
- Polarity A for singlemode applications
- Polarity A for singlemode. Polarity A or B for multimode

MTP®/MPO connectivity is recommended due to the following benefits

- Ability to support high networking speeds – 1G, 10G, 40G, 100G
- Reduction in cabling footprint – high density
- Maximum capacity of 144 fibres/cores per 1RU of rack space in patch panels modules housed in equipment racks
- 144 or 96 fibre /cores for cross connect frames.
- Plug and play pre-connectorised solution based on 12 fibre MTP connectivity and cassette modules
- Can support parallel optics
- Modular and scalable



Cable pathways / ducting

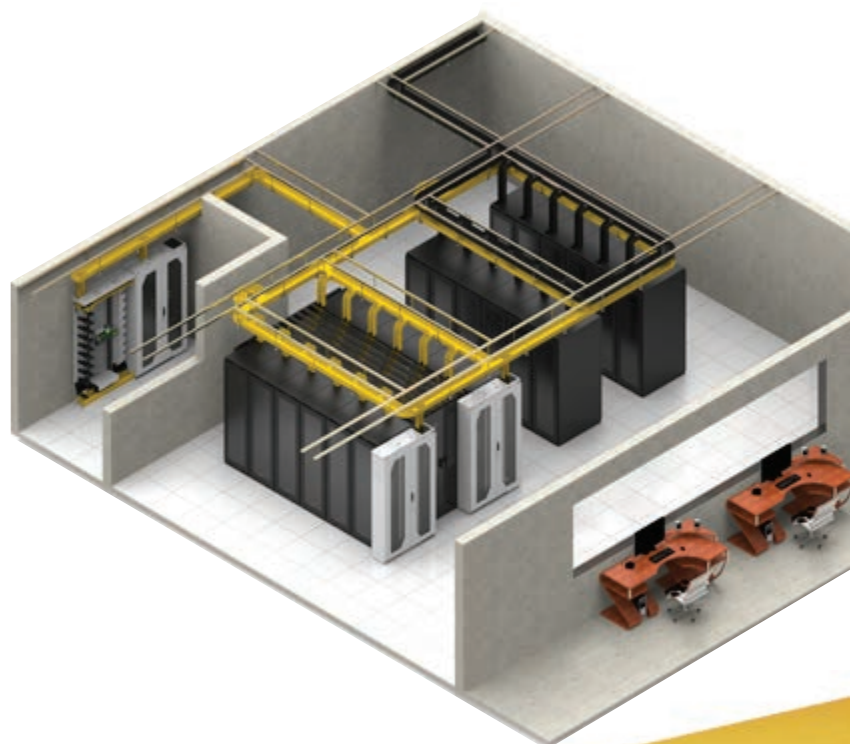
Most double sheath cable assemblies will be okay to route on cable trays, however patch leads and single sheath cable should still be routed in a ducting raceway.

Additionally, some network operators may prefer to have all fibre cabling routed in a fibre duct raceway for easier troubleshooting, identification and segregation of cable types.

If considering a fibre ducting raceway, WBT fibre duct complies with the following standards

- Fire retardant plastic, Halogen Free, for 100, 220 and 300mm ducting the rating is UL94V-0, for 30 and 50mm ducting the rating is UL94V-1
- UL2024A standard
- EEU - ROHS requirements
- GR-63 Core Earthquake test compliance

WB's ducting range is made using a special fire retardant Low Smoke Zero Halogen (LSZH) material certified to UL94V-0 specifications, while some other brands on the market are still using PVC. In case of a fire, LSZH materials significantly reduce the amount of toxic and corrosive gas emissions, minimising harm to personnel, buildings and transmission equipment.



DUCT SIZE	MILLIMETRES	30 X 30	50 X 50	100 X 50	100 X 100	220 X 100	300 X 100	600 X 100
	INCHES	1.25 x 1.25	2 x 2	4 x 2	4 x 4	8 x 4	12 x 4	24 x 4
OPTICAL CABLE SIZE/MM		2	2	2	2	2	2	2

Capacities

STRAIGHT DUCTING RACEWAY	100	280	560	1110	2450	3340	6680
DUCTING RACEWAY WITH RAMP-OFF				670	1470		
VERTICAL TEE-STRAIGHT THROUGH				1110	980		
VERTICAL TEE DOWNSPOUT-DROP				1110	1100		
OVER THE TOP OUTLET				670			

CONVOLUTED TUBING	SPLIT 20MM DIA.	38MM DIA.	50MM DIA.	75MM DIA.	50X50 SQUARE
OPTICAL CABLE SIZE/MM	2	2	2	2	2
TUBING CAPACITY	22	125	220	360	280

Note: Calculations are based on half full duct capacity - 50%

* To see other options for Fibre ducting raceway, please view our website or other product catalogues

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